In the claims:

Please substitute the following full listing of claims for the claims as originally filed or most recently amended. Mathematical expressions have been typographically reformatted but are not substantively amended.

1. (Currently Amended) A quasi-resonant buck converter comprising:

a) a connection point;

b) a top switch connected to a power source and to the connection point;

c) ~~a~~ an auxiliary switch connected to the connection point and to a return potential;

d) a resonant inductor connected to the connection point and to an output inductor;

e) a resonant capacitor connected to the return potential and to the resonant inductor, whereby the resonant inductor and resonant capacitor are connected in series across the auxiliary switch;

f) a synchronous switch operated using zero voltage switching connected in parallel with the resonant capacitor.

2. (Original) The buck converter of claim 1, wherein the resonant inductor has an inductance value in the range of 1-10000 nH.

3. (Original) The buck converter of claim 1, wherein the resonant capacitor has a capacitance value in the range of 0.01-100 μF.

4. (Original) The buck converter of claim 1, wherein the quantity $(3/2)\pi\sqrt{LC}$ is in the range of 0.05 to 5 microseconds, where L is the inductance of the resonant inductor, and C is the capacitance of the resonant capacitor.

5. (Original) The buck converter of claim 1, further comprising a switch controller for controlling the synchronous switch, wherein the switch controller can phase shift the operation of the synchronous switch to control output power.

6. (Previously Presented) The buck converter of claim 1, further comprising a switch controller for controlling the synchronous switch, and wherein the switch controller operates the synchronous switch so that an ON time of the synchronous switch is equal to an OFF time of the synchronous switch.

7. (Original) The buck converter of claim 1, further comprising a switch controller, and wherein the switch controller operates the synchronous switch so that an OFF time of the synchronous switch is approximately equal to $(3/2)\pi\sqrt{LC}$, where L is the inductance of the resonant inductor, and C is the capacitance of the resonant capacitor.

8. (Currently Amended) A quasi-resonant tap-buck converter comprising:

a) a connection point;

b) a top switch connected to a power source and to the connection point;

c) ~~a~~ an auxiliary switch connected to a return potential;

d) a clamping capacitor connected to the auxiliary switch and to the connection point;

e) a resonant inductor connected to the connection point;

f) primary and secondary coupled inductors connected in series with a parallel polarity, with the primary inductor connected to the resonant inductor;

g) a resonant capacitor connected between the return potential and a midpoint of the coupled

inductors ;

h) a synchronous switch operated using zero voltage switching connected in parallel with the resonant capacitor.

9. (Currently Amended) The tap-buck converter of claim 8, wherein the primary coupled inductor has an inductance value in the range of 1-10000 nH.

10. (Currently Amended) The tap-buck converter of claim 8, wherein the resonant capacitor has a capacitance value in the range of 0.01-100 mF.

11. (Currently Amended) The tap-buck converter of claim 8, wherein the quantity $(3/2)\pi\sqrt{(L+Lk)C}$ is in the range of 0.05 to 5 microseconds, where L is the inductance of the resonant inductor, Lk is the leakage inductance of the primary coupled inductor, and C is the capacitance of the resonant capacitor.

12. (Currently Amended) The tap-buck converter of claim 8, further comprising a switch controller that can vary the duration of a time period A and thereby control an output power.

13. (Currently Amended) The tap-buck converter of claim 8, further comprising a switch controller that can vary the combined duration of a time periods A and B and thereby control an output voltage.

14. (Currently Amended) The tap-buck converter of claim 8, further comprising a switch controller that controls the circuit such that an OFF time for the synchronous switch is approximately equal to $(3/2)\pi\sqrt{(L+Lk)C}$, where L is the inductance of the resonant inductor, Lk is the leakage inductance of the primary coupled inductor, and C is the capacitance of the resonant capacitor.

15. (Currently Amended) A quasi-resonant isolated converter comprising:

a) a connection point;

b) a top switch connected to a power source and to the connection point;

c) a auxiliary switch connected to a return potential;

d) a clamping capacitor connected to the auxiliary switch and to the connection point;

e) a resonant inductor connected to the connection point;

f) a transformer with a primary winding connected between the resonant inductor and the return potential, and with a secondary winding;

g) a synchronous switch operated using zero voltage switching connected in series with the secondary winding;

h) a resonant capacitor connected in parallel with the synchronous switch.

16. (Currently Amended) The ~~buck~~ isolated converter of claim 15, wherein the resonant inductor has an inductance value in the range of 1-10000 nH.

17. (Currently Amended) The ~~buck~~ isolated converter of claim 15, wherein the resonant capacitor has a capacitance value in the range of 0.01-100 mF.

18. (Currently Amended) The ~~buck~~ isolated converter of claim 15, wherein the quantity $(3/2)\pi(N_s/N_p)\sqrt{(L+Lk)C}$ is in the range of 0.05 to 5 microseconds, where L is the inductance of the resonant inductor, Lk is the leakage inductance of the transformer, C is the capacitance of the resonant capacitor, N_s is the number of turns in the secondary winding, and N_p is the number of turns in the primary winding.

19. (Currently Amended) The ~~buck~~ isolated converter of claim 15, further comprising a switch controller that can vary the duration of a time period A and thereby control the output power.

20. (Currently Amended) The ~~buck~~ isolated converter of claim 15, further comprising a switch controller that can vary the combined duration of a time periods A and B and thereby control the output voltage.

21. (Currently Amended) The ~~buck~~ isolated converter of claim 15, further comprising a switch controller that controls the circuit such that an OFF time for the synchronous switch is approximately equal to $(3/2)\pi(N_s/N_p)\sqrt{(L+Lk)C}$, where L is the inductance of the resonant inductor, Lk is the leakage inductance of the transformer, C is the capacitance of the resonant capacitor, N_s is the number of turns in the secondary winding, and N_p is the number of turns in the primary winding.

22. (Currently Amended) The ~~buck~~ isolated converter of claim 15 wherein the transformer has a N_p/N_s turns ratio of at least 4:1.

23. (Previously Presented)The buck converter of claim 1 wherein there is not a diode in series with the resonant inductor.

24. (Currently Amended) The tap-buck converter of claim 8 wherein there is not a diode in series with the resonant inductor.

25. (Currently Amended) The ~~buck~~ isolated converter of claim 15 wherein there is not a diode in series with the resonant inductor.

26. (New) A quasi-resonant power converter comprising
an output inductance,
an auxiliary inductance,
a capacitor, said capacitor being resonant with said auxiliary inductance,
a first switch for switching current from a voltage source to cause increasing current in said auxiliary inductance,
a second switch for providing freewheeling current to said auxiliary inductance,
a third switch for providing freewheeling current to said output inductance, and
means for controlling said first, second and third switches such that said first, second and third switches are switched between conductive and non-conductive states at times when a voltage across each of said first, second and third switches is substantially zero volts.

27. (New) A quasi-resonant power converter as recited in claim 26, wherein said means for controlling said first, second and third switches provides near-zero current switching from a conductive state to a non-conductive state of said second and third switches.

28. (new) A quasi-resonant power converter as recited in claim 26, wherein said means for controlling said first, second and third switches provides switching from a conductive state to a non-conductive state of said second and third switches when current through said second and third switches is between 5% and 20% of output current from said quasi-resonant power converter.

29. (New) A quasi-resonant power converter as recited in claim 26, wherein said first and second switches are bi-directional current devices.

30. (New) A quasi-resonant power converter as recited in claim 26, wherein said quasi-resonant power converter is a quasi-resonant buck converter.

31. (New) A quasi-resonant power converter as recited in claim 26, wherein said quasi-resonant power converter is a quasi-resonant tap-buck converter.

32. (New) A quasi-resonant power converter as recited in claim 26, wherein said quasi-resonant power converter is a quasi-resonant isolated converter.

33. (New) A quasi-resonant power converter as recited in claim 27, wherein said quasi-resonant power converter is a quasi-resonant buck converter.

34. (New) A quasi-resonant power converter as recited in claim 27, wherein said quasi-resonant power converter is a quasi-resonant tap-buck converter.

35. (New) A quasi-resonant power converter as recited in claim 27, wherein said quasi-resonant power converter is a quasi-resonant isolated converter.

36. (New) A quasi-resonant power converter comprising
an inductance,
an auxiliary inductance,
a parallel-connected combination of a switch and a capacitor wherein said capacitor is resonant with said auxiliary inductance and said switch includes a body diode and is operated using zero voltage switching.